

Convention on Nuclear Safety Questions Posted To Belgium in 2005

Seq. No	Article	Ref. in National Report
1	General	p. 1
Question/ Comment	The reports reviewed by France in view of the third peer-review meeting were all examined according to a standard list of issues derived from the obligations of the Convention. If an issue appeared to be covered in an incomplete way by the report of a Contracting Party, this led to a question or comment. However France recognizes that the corresponding information may be available in other existing documents.	
Answer	Comment noted.	
2	Article 6	§ II.B – p. 20
Question/ Comment	The report states that “ageing is systematically investigated to demonstrate the safety of installations during the next decades”. Could Belgium give further information related to the actions taken to investigate ageing?	
Answer	The main features of the Belgian ageing management program are described in the EUR document 19483 "Safe Management of NPP Ageing" (2001). This program has been re-evaluated in the framework of the current PSRs.	
3	Article 6	§ II.B – p. 21
Question/ Comment	The table indicates that power uprates were implemented at the occasion of steam generator replacement. Indeed the new components were adapted to this power increase, but was it verified that the safety margins initially existing for the unaffected components were not too much lowered?	
Answer	Before to decide a power uprate at the occasion of steam generators replacement, feasibility studies are performed in order to verify that the power plant is able to support the power increase with sufficient margins. If so, in the frame of the project itself, detailed calculations are performed to confirm this conclusion. Some additional hardware modifications could be required.	
4	Article 6	p 20, parag. 8,9
Question/ Comment	In section II.B it is stated that in Belgium "ageing is systematically investigated in order to demonstrate the safety of the installations during next decades". Concerning ageing, describe the permanent in-service monitoring and inspection of the installations? Which methods are used?	
Answer	Permanent in-service monitoring and inspection of the installations is ensured through the Technical Specifications surveillance requirements and associated programmes. The Technical Specifications are based on the American STS. ASME XI and OM-code are followed for mechanical components	
5	Article 6	Pg 20/207
Question/ Comment	What approach do you follow for the assessment of severe accident modifications and countermeasures in terms of safety principles, safety criteria or safety goals?	
Answer	Severe accidents are beyond design basis accidents for the existing Belgian plants.	

Modifications and countermeasures implemented specifically for severe accidents are therefore assessed in a pragmatic and realistic way. There are no safety goals. One important safety criteria is that the modifications do not reduce the protection against design basis accidents.

Seq. No		Article	Ref. in National Report
6		Article 7	page 44
Question/ Comment	<p>Articles 3 and 4 form the main chapter of the Law of 31 January 2003 on Phase out of Nuclear Energy.</p> <p>Which measures are being taken by the Belgian government to cope with the expected consequences of this law, such as</p> <p>1 - drain of knowledge out of the nuclear industry and the Regulatory Body and</p> <p>2 - loss of interest of younger professionals to work in the nuclear industry.</p>		
Answer	<p>The drain of knowledge and the loss of interest of young professional are generic problems many States having NPP's meet. Since a few years the international community has been active in sharing experience in this field and trying to find efficient solutions. In September 2004, in Saclay, France, an international conference addressed those issues and underlined their roots as well as the need to tackle them both at national and international level through i.e. relevant expert and education networks. No quick and easy solution is available to be implemented in the short term. For those States like Belgium which have voted a phase out law, it is important to ensure the availability of expertise at all the required levels to maintain a high level of safety and to avoid the possible amplification of the loss of interest such a phase out law could cause. At several occasion, the attention of Governmental authorities was drawn on this issue. The FANC and AVN are also encouraging initiatives that could help to prevent such a loss of interest and know-how. Hence it is supporting the BNEN Belgian Nuclear Education Network and its extension at European level, ENEN, both aiming at promoting careers and at forming young graduate in the field of nuclear science.</p>		
Seq. No		Article	Ref. in National Report
7		Article 7	section II.C.1, p 22
Question/ Comment	<p>This section mentions that the Law of 29 March 1958 has been abolished since 1 September 2001 and replaced by the Law of 15 April 1994. What was the status of that Law (of 15 April 1994) from 1994 to 2001? Is a period of 7 years to be understand as a kind of "vacatio legis"?</p>		
Answer	<p>The evolution of the legal framework was, and still is, achieved progressively. The Law of 15, April 1994 provides for transitional provisions (art.52, 52 bis) that notably enable to cope with periods required to elaborate Royal Decrees. For instance, pursuant to article 52 of the Law of 15, April 1994 the Royal Decree of 28 February 1963 remained in force as long as it was not replaced by a new one (20/7/2001) according the same Law (15/4/1994).</p>		
Seq. No		Article	Ref. in National Report
8		Article 7.2.1	page 23, line 15
Question/ Comment	<p>Section II.C.2.,</p> <p>In 2003 the law was modified to include certain provisions concerning physical protection measures.</p> <p>What is actually amended on physical protection, and which regulation is reinforced?</p>		
Answer	<p>The Law of 2 April 2003 provides for:</p>		

- provisions on physical protection,
- the transfer of competencies from the Ministry of Justice to the FANC,
- the abrogation of the Law of 4 August 1955 on State security in the nuclear field,
- other provisions aiming to fully up-date the Belgian national PP regime of nuclear installations.

The Royal Decrees giving effect to the law are under finalization.

Seq. No	Article	Ref. in National Report
9	Article 7.2.4	§ II.C.2 pp.24-25
Question/ Comment	The report mentions (see also § II.D.6 pp. 59-60) that since 1 September 2001 the surveillance of nuclear activities is performed by the FANC. According to the law of April 1994 (See §. II.C.3.D p. 29) the FANC may call upon the assistance of authorized inspection organisations (for instance AVN). What is the current balance status and trend between the new authority (FANC) and the old authorized inspection organisation?	
Answer	Since the FANC became fully operational, the 3-levels control structure has been developed and implemented as described in § II.D., 1, 2. In this context, the role of each actor has been further defined including for inspections tasks and appropriate procedures have been issued. In practice, the adopted approach delivers good results. A next step consists in translating the solution in a legal structure as required by the Law. According to it, inspections tasks are to be performed by the FANC which may call upon the assistance of authorized inspection organisations. On this basis many legal structures may be envisaged, a first one would consist in incorporating AVN in the FANC, another to call for AVN support on a contractual base subject to open market rules and calls for tender. None of these options seems to best fit the situation and the will is to develop a real long term partnership which would maintain specificities of each organism and ease their further development. It is important to maintain, the unique role and expertise of AVN under the driving force of the FANC and its know-how. This legal structure may lead to some modification of the Law of 15 April 1994.	

Seq. No	Article	Ref. in National Report
10	Article 7.2.4	§ II.C.3 – p. 26
Question/ Comment	The report mentions that Article 9 of the 1994 law states that the members of the supervision service of the Agency are considered as judiciary police officers. Could Belgium illustrate with some examples what kind of actions can be carried out by the people (inspectors) which could not be carried out by people who were not "judiciary police officers"?	
Answer	The members of the supervision service of the Agency, called nuclear inspectors, have the authority as judiciary police officers, auxiliaries of the King's Attorney. As such they can search for infractions to the law and establish them by official entry. Some of the specific actions that can be carried out by the nuclear inspectors are: <ul style="list-style-type: none"> - They have free unlimited access to the installations. - They can give a warning accompanied by a deadline by which the infractions must be resolved. - They can proceed to the seizure of equipment, substances, data carriers, etc... - They can interrogate any person to obtain the necessary information to clear out the infraction. 	

It has to be mentioned though, that for the nuclear power plants, up to now such actions (excepted for the warning accompanied by a deadline) did not need to be taken

Seq. No	Article	Ref. in National Report
11	Article 8	P. 47 Chapter II.D
Question/ Comment	What are the possibilities in Belgium of incorporating AVN and FANC into one homogenous organization? And what would be the process to follow to achieve this?	
Answer	Since the FANC became fully operational, the 3-levels control structure has been developed and implemented as described in § II.D., 1, 2. In this context, the role of each actor has been further defined including for inspections tasks and appropriate procedures have been issued. In practice, the adopted approach delivers good results. A next step consists in translating the solution in a legal structure as required by the Law. According to it, inspections tasks are to be performed by the FANC which may call upon the assistance of authorized inspection organisations. On this basis many legal structures may be envisaged, a first one would consist in incorporating AVN in the FANC, another to call for AVN support on a contractual base subject to open market rules and calls for tender. None of these options seems to best fit the situation and the will is to develop a real long term partnership which would maintain specificities of each organism and ease their further development. It is important to maintain, the unique role and expertise of AVN under the driving force of the FANC and its know-how. This legal structure may lead to some modification of the Law of 15 April 1994.	

Seq. No	Article	Ref. in National Report
12	Article 8	P. 50 Chapter II.D.2
Question/ Comment	As indicated in the report AVN has only power to make recommendations and referral to the FANC who has the power to take the necessary actions. What process is in place between AVN and the FANC to ensure that this process would not lead to unnecessary delays in timeously taking a remedial action should it be deemed necessary by the AVN inspection?	
Answer	The structure of the control tasks and its implementation are such that the consultation and the decision process work very well between the operator, AVN and the FANC. This allows to anticipate any situation where an important disagreement could happen and would require very rapid action. Nevertheless, in the case that is raised, although rather theoretical, where a disagreement would occur on an action to be taken rapidly, AVN would immediately take contact with the FANC who is empowered to enforce measures that would be required for the sake of safety.	

Seq. No	Article	Ref. in National Report
13	Article 8	P.50 Chapter II.D.2
Question/ Comment	As indicated in the report AVN issues approval for implementing modifications to the installations. What is the role of FANC in this process?Furthermore what is the regulatory oversight of AVN and FANC in the control of changes to other plant operating documents such as Operating Technical Specifications, Accident procedures , Emergency plans etc.. ??	
Answer	All projects of modification are examined by AVN and report is made to the FANC. Those modifications are discussed, as appropriate, during the AVN-	

FANC meetings, contact meetings with the operator...(this is also the case for the mentioned documents).Major modifications, pursuant to the FANC judgement, are subject to the FANC approval and in some case to the issuing of a R.D. (i.e. power increase).

Seq. No	Article	Ref. in National Report
14	Article 8	P.54 Chapter II.D.3.
Question/ Comment	Although in this chapter it is indicated that AVN, as an authorized inspection organization, meets certain prescribed requirements what processes and capability does FANC has to monitor and check/verify on the work and decisions/recommendations of AVN?	
Answer	As stated, notably in II.D.3, the legal requirement the authorised inspection organisation has to fulfilled may be checked/monitored by different means. One of them is the so called survey commission, chaired by the FANC where activities reports are presented, which are adequate to evaluate AVN ability to respond to the legal requirements. On the field, there are many meetings between the FANC and AVN, especially between experts, which offer opportunities to the FANC to estimate the quality of AVN work and to identify, should the case happen, any deficiency. Being operational for a few years, the FANC possess now a satisfactory extended know-how, based notably on its experts having large experience in the nuclear field (see also II.D.3.a).	

Seq. No	Article	Ref. in National Report
15	Article 8	Section II.D
Question/ Comment	Clarification (about inspections performed by FANC and/or AVN) It is not clear how the responsibilities are divided and what is the scope of the inspections performed by both organisations: Are those inspections independent?- Do inspectors from different organisations perform them?	
Answer	Inspections of NPP's are performed by AVN. However, supplementary inspections are performed from time to time, or in some specific cases, by the FANC. Joint inspections may also happen. They contribute to increase the consistency of the 3-levels established control structure.The inspections performed by AVN are reported to the FANC and discussed as appropriate. There are no inspections performed by other organisations than FANC or AVN.	

Seq. No	Article	Ref. in National Report
16	Article 8	Page 52
Question/ Comment	What criterion is applied as regards notifying the public of events at nuclear and radioactive facilities, and with what degree of social acceptance?	
Answer	The criterion for notifying the public of events at nuclear and radioactive facilities is based on the use of the International INES scale. In a convention (currently under review) between the regulator, the authorised inspection organisation, and the license holders, the actions that need to be taken are clearly defined. They consist in notifying as soon as possible the regulator and the authorised inspection organisation, and depending on the final INES scale of the event (INES level 2 or higher or events that attract the interest of the public) there is an obligation of the license holder to inform the public by means of an official press release . The license holder is however free to communicate other events (even classified at a lower INES scale, below or beyond the INES scale) depending on the social	

importance and the actual social climate. In other words, for minor events, it is the license holder who judges the need for notifying the public.

Seq. No 17		Article Article 8	Ref. in National Report
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Question/
Comment Are there permanent resident inspectors of the regulatory body on NPP sites?

Answer Neither the FANC nor AVN have permanent resident inspectors on the NPP sites in the sense that they are present on-site at all times. The authorised inspection organisation does however work with “dedicated” inspectors per NPP and per site with regular visits and inspections on-site. Moreover, since the physical distance between the dedicated inspector’s home and the NPP site is at the most about 100 km, they can be at their NPP within the timescale of one hour

Seq. No 18		Article Article 8	Ref. in National Report
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Question/
Comment What documents govern interrelations between governmental and non-governmental organisations entrusted with regulatory functions, and in particular, delegate authorities regarding licensing, inspections and safety assessments?

Answer First there is the Law of 15 April 1994 (article 28, 29), then the GRR-2001 (including art.23 and art.74 describing the applicable rules to entrust organisations of specific tasks which then become Authorised inspection organisation, AVN for NPP). At the working level there are documents detailing procedures to be applied for controls and detailing the delegated tasks to AVN

Seq. No 19		Article Article 8.1	Ref. in National Report § II.D.6 – pp. 59-60
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Question/
Comment The report highlights the new relations between the Safety Authority and the Authorized inspection Agency (See also the 1994 law § II.C.3.d pp. 29-30), which have now developed for more than three years. In particular the article 29 of the law states that the recognition of an authorized inspection organisation is valid for a maximum of five years, with a possible extension for an other period of five years. Does this mean that the total recognition lifetime cannot exceed 10 years? (Or several extension periods are feasible?). Can Belgium explain what are supposed to be the relations between the Federal Agency and AVN at the end of a recognition period? Is it an issue for Authorized inspection organisations?

Answer At the present time the structure implemented both legally and practically is delivering satisfactory results, it enables the good working of the 3-levels control regime. However, as stated in a previous answer to question (on art.7.2.4, &II.C.2 pp 24-25), some legal adjustments are required in order to ensure the long term partnership the FANC is willing to establish with AVN. As far as the art.29 and the period of prolongation are concerned, the provision is not interpreted as limiting the number of prolongations to one.

Seq. No 20		Article Article 8.2	Ref. in National Report page 24, line 38
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Question/
Comment Section II.C.2. the last paragraph of page 24, Since 1 September 2001 the surveillance of nuclear activities is performed by the Federal Agency for Nuclear Control (FANC). If some significant results are already gained by the surveillance, please show them concretely.

Answer The Law of 15 April 1994 intended to centralize the safety authorities which were

in the past more spread over different Ministries and to increase the resources. The first benefit is therefore a gain in efficiency and a better use of the resources. Another one is that the responsible authority is much easier to identify, notably by the users (operators). As far as controls are concerned, the tasks are implemented by FANC with the help of AVN, the organisation of the work is therefore clearer and eased under the new structure. Much more exchange on safety inspection controls, than is the past, are done between the safety authority and AVN.

Seq. No 21		Article Article 9	Ref. in National Report Page 61
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Question/
Comment Good practice:
Prime responsibility with the licensee as per the requirement of the convention. Steps are in place to ensure licence holder meets its responsibility. The licensee is required to comply with the SAR and the scope of the SAR includes OTS, operating rules and QA/QM which underpin the safety analysis aspects of the SAR. AVN Inspectors verify compliance on a daily basis.

Comment: Reference is made to Article 23.8 of GRR-2001 whereby the Regulatory Body is required to control the implementation of the duties of the operator's Health Physics Department. This requirement seems to violate the principle of the independence of the regulator from the activities of the operator. How do the licence holders ensure that they meet their responsibilities? Do the licence holders have independent inspectorate and assurance functions in place?

Answer Article 23 indeed requires that the license holder establishes a Health Physics Department. It is also required that the Health Physics Department has sufficient competence and independence. To ensure these demands, the head of the Health Physics Department for NPP's:

- has to be a Class I expert (specific recognition by the Agency for a limited time scale),
- has to be the same person responsible for classical safety issues
- reports directly to the general manager, and hence has no hierarchical supervisor within the organisational structure.

Together with the requirement for operational procedures, working practices, implementation of a QA/QM system, etc... this allows

- a) the license holder to comply with their responsibilities
- b) the Health Physics Department to perform their duties in a competent and independent way
- c) the authorised inspection organisation and the Agency to control the duties of the Health Physics Department.

There is no violation of the principle of the independence of the regulator from the activities of the operator in this way.

Seq. No 22		Article Article 9	Ref. in National Report
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Question/
Comment Is the regulatory body (AVN) authorised by the Government or Federal Agency for Nuclear Safety to apply enforcement actions, including financial charges to legal/natural entities in case of non-compliance with licence terms, rules and standards on nuclear and radiation safety?

Answer The authorised inspection agency AVN does not have the legal power to apply enforcement actions in case of non-compliances of the license conditions or the

GRR-2001. AVN reports those non-compliances to the FANC; which can (and has the legal power to) initiate enforcement actions. Note that “rules and standards” on nuclear and radiation safety have no legal value. Only the GRR-2001 and the licence documents (including the Safety Report) have legal value

Seq. No 23		Article Article 10	Ref. in National Report §II.F.1 – p. 62
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Question/
Comment The report gives a comprehensive description of the operating experience feedback system in use. Could Belgium give more details on measures taken to promote the appropriate safety culture and how the Regulatory Bodies assess it?

Answer In order to assess safety performances, the licensee performs regular WANO peer reviews. An assessment of the safety of NPPs is performed by the RB on a yearly basis (or specifically as deemed necessary). Among other things, this assessment is looking for signs of degradation in safety performances as described in the OCDE/AEN document « The role of the nuclear regulator in promoting and evaluating safety culture – Early signs of declining performances ».

Seq. No 24		Article Article 10	Ref. in National Report p. 62/66, II.F
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Question/
Comment Are safety management systems required or promoted by the Belgian authority?
Is there a regulation on safety management systems?

Answer There is no reference in the GRR-2001 concerning the need of a safety management system. However, provisions for a safety management system are included in the Safety Report (ex. chapter 13)

Seq. No 25		Article Article 10	Ref. in National Report page63, line 14
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Question/
Comment Section II.F.1.9th paragraph
Any incident occurring at a Belgian power station is the subject of a deeper (root cause) analysis in order to determine possible corrective action.
Who executes a deeper analysis? And who evaluates the result of the deeper analysis?
Besides, was there such an incident that was the subject of a deeper analysis recently?

Answer The licensee is responsible for the root cause analysis of the incidents. He is also responsible to perform this activity according to the QA rules, i.e. with due verification and approval. Examples of incidents that were analyzed can be found in the IRS database.

Seq. No 26		Article Article 10	Ref. in National Report II.F.2
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Question/
Comment In the Article 10 of the National Report (II.F.2) it is described “The Belgian power stations are members of INPO, WANO and the Owners Groups set up by Framatome and Westinghouse, which provide a valuable source of information”. Please provide more information on the external peer reviews of operational performance and their results

Answer Each site organizes, once every three years, a peer review Wano . These reviews compare the nuclear power plants with standards of excellence and formulate areas for improvements. A follow-up is organized after 18 months by the peers and the progress in each area for improvements is evaluated. The sites are also members of owners' groups set up by Framatome and Westinhouse. The owners

profit from exchanges of experiences and participate in working groups for examples : the stress corrosion cracking , the outage optimization , the ageing ...

Seq. No	Article	Ref. in National Report
27	Article 10	General
Question/ Comment	From the brief description of the regulatory authority approach to operational experience it is apparent that a process has been put in place to continuously monitor developments in other countries to proved feedback from foreign incidents and the safety improvements implemented in other plants – a few modifications, which have been implemented in the plants following the incidents are described in this report.	
Answer	General Question:Can the regulatory authority enforce implementation of certain safety improvements / modifications in a particular plant if the utility is not willing to do so? The regulatory authority (FANC) can enforce implementation of certain safety improvements/modifications, via the Scientific council. Article 13 of the GRR-2001 states :“The competent authority can complete or modify the licence. For class 1 facilities, it consults first the Scientific Council.The Scientific Council can suggest new (operating) conditions by itself or by proposal of the FANC Control & Surveillance department.”	

Seq. No	Article	Ref. in National Report
28	Article 10	Ch II.C.6 Page 44
Question/ Comment	As stated in the report on 31 January 2003 Parliament adopted the law to phase-out nuclear energy and the first plant will cease commercial operation in 2015. What measures are in place to prevent the degradation in safety of the plants in situation when the utility is loosing interest in investing more resources into the facilities knowing that years of plant operation are numbered?	
Answer	What is the composition (people outside of the plant are mentioned) and role of Safety Evaluation Committee? This point has been raised at Governmental level were potential risks and consequences were presented. Relevant dialogue with the operator on those issues has been carried out and commitments have been made to guarantee a high level of safety and therefore sufficient investment and available resources. On another hand, any modification of the organisation of the operator or investment plan is subject to specific attention (also to be seen in the context of the liberalization of the market) and examination in order to detect any early sign of degradation in the safety which trigger remediation actions request by the safety authorities.The Safety Evaluation Committee has been established according the requirements of § I.B.1.2 of the NUREG-0737. This committee deals with all nuclear related safety problems that occurred on the site, the emergency plan and the QA-system. It evaluates as well the training programmes and issues recommendations to improve the safety of the nuclear installations. The committee meets at least twice per year and is composed as follows: the site director (who is also the president of the committee), the heads of the different operational clusters, including the Health Physics department and the nuclear Safety department, and one representative of another production site. In function of the topics on the agenda, the president of the committee can invite other experts (internal or external to the organisation) to participate.	

Seq. No 29		Article Article 11	Ref. in National Report section II.G.4, p 69
Question/ Comment	<p>Second paragraph in this section states that the training programs are defined in the Safety Analysis Report, which includes a "function – programme" correlation chart.</p> <p>When developing training programs were Systematical Approach to Training principles, including Job and Task Analysis, considered?</p>		
Answer	<p>The SAT methodology was not used to develop the training programs defined in the SAR. These programs are the minimal required training that has to be followed by plant personnel. The licensee is performing an in-depth analysis of competences, skills and knowledge needed for the different functions in order to improve the training programs</p>		
Seq. No 30		Article Article 11	Ref. in National Report
Question/ Comment	<p>Is it obligatory for the regulatory body staff of class 1 to be trained according to periodic professional development programme?</p>		
Answer	<p>In order to be authorised to perform inspections, the experts of AVN must be authorized as "class I expert" by the FANC. These authorisations are individual and are delivered for a limited time (in general six years). For the renewal of these authorisation, the expert must "prove that he develops his professional skills and his knowledge in the frame of a high level training" At this point of view, the training is mandatory. The Scientific Council verifies if the training of the expert is relevant and must give a positive advice regarding the renewal of the authorisation (art 73 of GRR-2001).</p>		
Seq. No 31		Article Article 11.1	Ref. in National Report p. 69, II.G.4
Question/ Comment	<p>The report describes in general the retraining program for licensed personnel and states that there are retraining plans for the entire plant personnel.</p> <p>Are there any qualification and retraining requirements for the management personnel of the operating organisation?</p> <p>Is the authority regularly informed about the respective activities?</p>		
Answer	<p>The qualification requirements cover all management personnel up to the plant manager. There are no retraining requirements for the management personnel of the operating organisation. Although the licensee is not required to regularly inform the RB about retraining for non-licensed personnel, the last can always ask for information in this area.</p>		
Seq. No 32		Article Article 11.1	Ref. in National Report page 68
Question/ Comment	<p>On page 68 of the report a number of provisions for decommissioning and for the management of spent fuel are described which were established by a new law in force since July 2003.</p> <p>Also on this this page it is stated that "If these provisions for spent fuel management or installation decommissioning is found to be inferior to the real cost, the Utilities will remit to the Company with the sum so that the difference will be covered."</p> <p>How are the "real costs" of decommissioning determined? Is there a prescribed way of calculation of these costs?</p>		
Answer	<p>The law has foreseen that the utilities have to cover the difference between the</p>		

provisions and the real cost of a decommissioning. when the decommissioning will occur. It is in fact a formal and legal future obligation for the utilities and it is a insurance for the Nuclear Provisions Company that, in any circumstances, the costs of the decommissioning will be covered after the final shutdown of the nuclear power plants. Nevertheless, the utilities will review, every three years, the estimation of the decommissioning cost and submit the result to the Company that would adapt the provisions if necessary.

Seq. No 33		Article Article 11.2	Ref. in National Report
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Question/
Comment In what ways have both the operator and regulator planned for human resource needs during decommissioning, given the law on phase-out of nuclear power and especially with large numbers of potential retirees in the near future?

Answer Up to now, there has been no planning for the human resources needs during decommissioning. There are still more than 10 years to go before the first shutdown. However, the attention of the politicians has been drawn to the negative effects of the phase-out law on the ability to attract young engineers to the nuclear field

Seq. No 34		Article Article 12	Ref. in National Report
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Question/
Comment Good practice
The Human Factors (HF) related activities with respect to plant operations, including the STA function, and experience feedback are considered good practices.

Comment

The report does seem to focus on operations to the exclusion of human factors in the broader context. The regulatory role should be enhanced by some requirements linked to HF and a corresponding compliance assurance programme by the regulator.

What Human Reliability Analysis techniques are currently used in PSA applications?

Are plant-specific simulator data collected for estimation of human error probabilities?

Please elaborate on the specific procedures written to provide guidance to the operators in the event of an earthquake?

Answer There are no specific requirements as related to human factors aspects set by the RB. However the efforts performed by the licensee in this area are monitored by the RB. In the PSAs, the Human Reliability Analysis techniques currently used are mainly based on approaches defined in the USA (e.g. THERP, ASEP, etc.). The models are to some extent adapted based on experiences in France and to reflect specific Belgian aspects of operational organisation (involvement of STA, crisis team, etc.). No plant-specific simulator data are collected for estimation of human error probabilities. The issue of procedures to provide guidance to operators in case of an earthquake has been covered in the Periodic Safety Reviews. The approach was mainly based on the USNRC Regulatory Guides 1.166 and 1.167. Taking into account the specific seismic detection instrumentation available at

both sites, specific procedures for the operators related to short term and mid-term actions have been written for all NPPs.

Seq. No 35		Article Article 13	Ref. in National Report §II.I.3 – p. 76-78
Question/ Comment	Could Belgium give the main principles guiding the surveillance programme of contractors?		
Answer	The main principles on surveillance of contractors are based on 10CFR50 Appendix B requirements.		
Seq. No 36		Article Article 13	Ref. in National Report section II.I.5, p 79
Question/ Comment	It is mentioned that during power station operation, AVN performs systematic inspections, including some dedicated to quality assurance procedures assessment. Does AVN examine and/or verify any changes (revisions) to the quality assurance programmes of the licensees?		
Answer	Any significant change to the quality assurance programme (e.g. those that could modify the content of chapter 17.2 - "Quality assurance during operation" of the FSAR) are discussed with the licensee		
Seq. No 37		Article Article 14	Ref. in National Report Section III.J.2
Question/ Comment	In section II.J.2 (c) severe accidents studies undertaken are described and no “reactor pit flooding” issue is mentioned there. However we are aware that reactor pit flooding modification has been implemented on one of the Belgium plants. What were the bases to implement this modification?		
Answer	In sections II.J.2 and II.N.2, the severe accident analyses carried out in the framework of the ten-yearly safety reviews are described. Later on, severe accident management guidelines have been developed for all Belgian plants (see sections II.N.6 and II.0.4), and in that context the feasibility of cavity flooding prior to vessel rupture during a core melt accident has been evaluated. These analyses lead to the implementation of gravitational cavity flooding measures at the Doel plants (all units), whereas decisions are not yet taken for the Tihange plants (all units). The decision for such a plant modification has been the result of considerations based on PSA level 2 and severe accident studies showing a need to prevent or at least delay containment failure due to basemat meltthrough, the available knowledge about melt coolability after vessel rupture and about the risk of containment failure due to ex-vessel steam explosion, and the need for adequate strategies and measures during severe accident management.		
Seq. No 38		Article Article 14	Ref. in National Report
Question/ Comment	Only one aspect of verification of safety is described in detail in this chapter e.g. periodic safety assessment. The main objective of the first periodic review was to verify the safety level of the oldest units. The specifics of the nuclear industry in Belgium are such that the oldest plants were built to different standards than the newest so different safety criteria were applied. The periodic safety assessment was a vehicle used to bring the oldest units to the comparable standard with the latest plants. the problem of “double standards or different criteria” may exist, particularly with two plants at the same site.		

The Plant Condition Management approach is described only in a very brief

manner. No details are given other than stating that programmes are in place. The annexe to the document gives headings to plant specific items inter-alia related to ageing management but with no details.

Answer The problem of “double standards or different criteria” may indeed exist, particularly with two plants at the same site. Periodic safety Assessments increase the safety level, particularly for older units. However, it is not mandatory to ensure full compliance with current standards and practices. The main features of the Belgian Plant Condition Management and ageing management programmes are described in the EUR document 19483 "Safe Management of NPP Ageing" (2001). These programmes have been re-evaluated in the framework of the current PSRs.

Seq. No 39		Article Article 14	Ref. in National Report Appendix IV
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Question/
Comment It is noted that subjects examined during first safety 10-year safety reviews of the plants are different between the plants.
How was the list derived?
Were all findings/recommendations/modifications implemented after the evaluations verified for other units/plants?

Answer The subjects examined during first safety 10-year safety reviews of the older units (i.e. in about 1985) were mainly derived from the items covered by the safety assessments of the newer units, which had just started at the time. The bulk of the American guidelines (e.g. Regulatory Guides, S.R.P.,...) was not available before the start-up of the oldest units, well during the safety assessments of the newer ones. Some findings/ recommendations/ modifications related to the implementation of those guidelines were completed for all the units after start-up vs. first 10-year PSR (e.g. demonstration of equipment qualification in adverse conditions).

Seq. No 40		Article Article 14.2	Ref. in National Report
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Question/
Comment How does the regulatory body plan to validate the licensee's PSA models and/or develop independent analyses?

Answer From the beginning of the PSA program for the Belgian NPPs (around 1986), all PSAs have been subject of an on-line review by AVN. This review is covering as well methodological aspects as the modelling of the plants (being all rather specific). At the end of the review process, an Evaluation Report is written by AVN, in which recommendations are formulated for future updates or extensions of the PSAs. AVN does not perform independent analyses. Nevertheless AVN possesses the complete computer models of all PSAs and can perform independent verifications and PSA applications where appropriate

Seq. No 41		Article Article 15	Ref. in National Report p. 86, II.K
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Question/
Comment Which acceptance criteria have been used for the regulatory review of the radiological consequences of design basis accidents? Are these criteria related to releases or related to radiological exposures? If dose limits are applied, which are the parameters (e.g. exposure pathways, integration times, distances) considered for the calculation?

Answer There are no legal limits in Belgium for the radiological consequences of accidents. The licensee calculates the radiological exposures at the site boundary

and at the closest border (in the frame of the Euratom Treaty Art 37) for the most penalizing accidents. If the results are judged acceptable by the licensing authority, the plant is granted a license and the calculated doses become de facto limits for all accidents

Seq. No		Article	Ref. in National Report
42		Article 15	page 87, line 10
Question/ Comment	<p>Section II.K.3.b. first paragraph</p> <p>The mean value for the 7 Belgian units has been reduced by a factor of about 3 during the 1990-2003 period.</p> <p>What has contributed to reduction of the collective annual dose the most effectively among various measures?</p> <p>How is the influence of improvement of plant performance to reduce total Mandates?</p>		
Answer	<p>a) It's always a complex combination of several items: experience feedback of previous operations and feedback during the actual operation, improvement of the planning of the operations (less people and less man-hours needed), improvement of the management of the chemical process (e.g. resulting to lower source terms of exposure), better implementation of the ALARA-procedures, the use of more strict dose limits, enhancement of the protection measures (more and appropriate shielding), etc.. A better planning of the operations is one of the items that was the most effective one. It's also important to mention that in the period 1993-2001, there has been an important progress to reduce the durations (+ collective doses) for outage and SGR. These large works were a major contribution to the collective doses. b) It's not clear what is here mentioned with the term "Mandates" (Is it "Man-days"?). The improvement of the plant performance is also the result of more preventive interventions. In first resort it leads of course to a higher collective dose, but it also reduces the number of corrective actions that are needed during exploitation. These interventions for corrective actions can be dose burden so that they give an important contribution to the collective doses.</p>		
Seq. No		Article	Ref. in National Report
43		Article 15	SECTION II.K.3.a
Question/ Comment	<p>How is solid radioactive waste managed, and how are quantities and activities kept ALARA?</p> <p>How are the effluent releases kept ALARA?</p> <p>What is the ALARA limit for average worker dose, and how is it ensured that annual dose limits are not exceeded?</p>		
Answer	<p>a) The NPPs have their own processing and conditioning facilities. The waste processed and conditioned on the production site is composed of the waste (ion-exchange resin, filters and other diverse waste) with a dose rate higher than 2 mSv/h and the evaporator concentrates. Non-conditioned waste with a dose rate lower than this limit is sent to Belgoprocess (the central waste processing company in Belgium) where it is conditioned in the CILVA installation (incineration and/or supercompaction). The conditioned radioactive waste is always transferred at Belgoprocess for intermediate term storage. To limit the quantities and activities of the solid radioactive waste, there are general principles of application for all types of waste (solid, liquid or gaseous):</p> <ul style="list-style-type: none"> - using appropriate technologies with a minimal production of radioactive waste; - improvement of the conditioning process of radioactive waste (e.g. to maximize the useful content of a vessel to store the radioactive waste); 		

- limiting the spread of radioactive materials that could lead to additional radioactive waste (use of appropriate confinements);
- assessing if certain materials might be re-used efficiently in the controlled area;
- decontamination and unconditional clearance of solid radioactive materials;
- etc....

b) The activities thus discharged into the environment, have to be kept as low as reasonably achievable (conform GRR-2001, art. 20.1 in general and art. 34.5 with regard to liquid discharge, art. 36.3 for gaseous effluents). The concentration of radionuclides present in the evacuation of gaseous effluents into the atmosphere and of liquid waste into the surface waters and the sewerage, is limited in a generic manner: up to one thousandth of the limit (calculated according to the method prescribed in the GRR-2001) of the annual intake through ingestion by an adult belonging to the public in liquid radioactive discharge; up to the derived limit (calculated according to the method prescribed in the GRR-2001) of the concentration in the air for persons belonging to the public, in gaseous radioactive waste. For most radionuclides, the corresponding limit values are published in the GRR-2001 (in Bq/l waste water and Bq/m³ discharged air). The licences nuclear facilities can deviate from these generically determined limit values. In those cases the discharge limits for the facilities are determined by means of exposition scenarios, taking into account the observance of the dose limits for members of the public (population) up to a fraction of the maximum effective dose authorised of 1 mSv/year. In addition there are also operational release limits (limiting the release on time based assumptions), related with a scheme to notify the operators, the HPD, AVN and the FANC. Based on all these limits as mentioned above, there is also, on a voluntary basis, the implementation of an additional discharge constraint by the operator. For example: based on the year limits, the goal is to have only a fraction (order 1%) of these limits.

c) There is no specific ALARA-limit for average worker dose. The application modalities of the ALARA-procedure are, for example for the NPPs of the site Doel, based on preliminary dose estimates (environmental dose rate level, dose rate level in contact of exposure sources, expected collective dose) and hereby well defined limits. Based on this evaluation the magnitude of the ALARA-procedure is defined. There are only operational limits for the individual dose. On a voluntary basis there is implementation of a dose constraint for the maximum individual dose. In practice for all the nuclear installations, this is about the half of the dose limit (dose limit = 20 mSv for 12 consecutive months, in accordance with the GRR-2001). Also operational limits are defined for shorter periods (day, week and month). At locations with important dose rates, operational dosimeters are obliged to conform the GRR-2001 (for exposures above 0,5 mSv/week). For instance, the combination of a daily registration of the committed dose and a strict follow-up programme has to ensure that the dose limits are not exceeded.

Seq. No	Article	Ref. in National Report
44	Article 15	SECTION II.K.3.d
Question/ Comment	<p>Good Practice</p> <p>In general good measures have been implemented to ensure that the collective annual dose has been reduced.</p> <p>What system is in place for environmental monitoring at the NPP and at national level?</p>	
Answer	<p>In accordance with Art. 21 of the law of 15 April 1994 creating the Federal</p>	

Agency for Nuclear Control (FANC), the Agency ensures the surveillance and the control of the radioactivity on the whole territory, both in normal conditions and during emergencies. In normal conditions this mission includes the regular measurement of the radioactivity in the air, in water, of the soil and of the food chain, as well as the evaluation and the surveillance of the doses of ionising radiation received by the population. To this end the Agency can rely on the measurement of its automatic radioactivity monitoring network TELERAD and on the assistance of competent Belgian institutes which are contracted to sample, prepare and measure the environmental samples. The sampling programme is defined every year in order to allow a reliable assessment of the impact of nuclear activities on the population and on the environment and on to cope with the requirements of the EU regulations.

Seq. No 45		Article Article 16	Ref. in National Report section II.L.2.b,p97
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Question/
Comment Article 16 states that the intervention guidance levels are defined in the text of the Decision of the FANC of 17 October 2003.
Do in Belgium exist the intervention guidance levels for long term countermeasures, i.e. temporary relocation and permanent resettlement? If they exist, what are their values?

Answer see support document below Answer 1_slo

Support » Answer 1_slo
Documents

Seq. No 46		Article Article 16.1	Ref. in National Report § II.L.2.b – p. 97
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Question/
Comment A pre-distribution of iodine tablets is mentioned. How was implemented this distribution ? Is it intended to proceed to a complementary distribution in the event of an actual severe accident ?

Answer In 1999, the inhabitants from Belgian communes located within a radius of 10 km from a Belgian nuclear site (with the exception of the IRE site in Fleurus for which the radius was limited at 5 km) or from Chooz NPP were invited to get free stable iodine tablets from their local chemist. Vouchers were distributed to communities in these zones (schools, residential leisure centres, residential senior centres, ...) that had to be exchanged at their chemist's against packs of iodine tablets. In 2002, the iodine distribution campaign was repeated and extended to the population (inhabitants and communities) of communes located within a radius of 20 km from a Belgian nuclear site (with the exception of the IRE site in Fleurus for which the radius was limited at 10 km) or from the Chooz and Borssele NPP's. Decentralised stocks are stored in the regional centres of the Civil Protection for rapid distribution in case of emergency in a zone of 30 km around nuclear installations. A central stock is maintained in Brussels. The stable iodine distribution campaigns were supported by information campaigns to the target groups.

Seq. No 47		Article Article 16.1	Ref. in National Report p. 97, 2. para, II.L
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Question/
Comment Regarding the advice of the socio-economical cell, is there any guidance in form of criteria or guidelines for the work/decisions of this cell? Please provide more details regarding the implementation of this cell and the experiences with respect to the emergency management.

Answer The socio-economical cell is a new element recently introduced in nuclear emergency planning (Royal Decree of 17 October 2003). However, since the end of 2002 already, different working groups have been active at developing specific aspects such as procedures, creation of databases, organising the communication within the cell (between the many contributors: federal and regional ministries of transport, communications,..., federal professional groups such as water distribution societies, ...) and with other cells of the crisis management structure. The participation of the socio-economical cell is now regularly tested in emergency exercises to check the to-date available structure and processes and identify to aspects needing development or improvements. The experience gathered up to now has confirmed the usefulness of socio-economical cell in addressing the practical feasibility of proposed remedial actions.

Seq. No 48		Article Article 16.1	Ref. in National Report page43, line14
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Question/ Comment Section II.C.5, 4th paragraph,
The Royal Decree of 17 October 2003 defines the national emergency plan and the tasks of each of the parties involved. The relevant infrastructure is being provided accordingly.
Please tell us some examples of the relevant infrastructure already provided now.

Answer Please refer to section II.L. (Article 16) from § 2.b. onward where the structure and functioning of the Belgian nuclear emergency plan is detailed

Seq. No 49		Article Article 16.2	Ref. in National Report p. 93, II.L
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Question/ Comment Emergency plans are public documents.
Is there a systematic approach to familiarize the public with these plans?
What was the response of the public to these plans?

Answer The Royal Decree of 20 July 2001, pursuant to the Euratom 89/618 Directive, specifies in its Article 72 that the population susceptible to be affected by a radiological emergency has to be informed about the risk and countermeasures. The last information campaign happened in 2002; the next one is planned in 2007. Information sessions are regularly organised for target-public groups. The FANC organises and maintains a public web-site where the interested people may find relevant information concerning general subjects as well as topical ones

Seq. No 50		Article Article 16.3	Ref. in National Report Section II.L.2.c
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Question/ Comment Section II.L.2.c mentions that information exchanges have been developed as a result of transborder collaboration during the emergency exercises of Chooz and Gravelines. What insights have been gained as a result of national emergency exercises?

Answer The collaboration and exchange of observers and information that we had repeatedly with our French counterparts at the occasion of nuclear emergency exercises concerning Chooz and Gravelines has greatly contributed to gain mutual understanding concerning the particularities existing on both site of the border regarding the management of a nuclear crises (different structure, decision levels, assessment tools, intervention guidelines, ...). That, together with personal contacts, helps the communication and common understanding of the situation assessment and of the proposed remediation actions for the protection of the population on both site of the border. Agreeing upon remediation strategies is of

peculiar importance for maintaining public trust. A similar collaboration exist with Netherlands (participation of Belgium to the exercise of Borssele in May 2005) and with Luxemburg

Seq. No		Article	Ref. in National Report
51		Article 17	P.101 Chapter II.M.1
Question/ Comment	<p>It is commendable that in view of local conditions (population density), additional measures have been implemented e.g double containment, greater redundancy and independence of trains etc..</p> <p>It is not clear from the report what role and responsibility do the Safety Authorities have and what mechanisms are in place to review proposed urban developments in the vicinity of nuclear installations in the operational phase? Linked to the above question : are there criteria for such reviews in the assessment of the impact of such development on for example the effectiveness and viability of the nuclear emergency plans ? (as indicated in the report “no detailed criterion was imposed” (we assume for the construction phase)</p>		
Answer	<p>The urban development in the vicinity of the nuclear power plants does not belong to the competencies of the FANC. The local and regional authorities are the competent authorities for the Urban development, and not the federal state nor the nuclear safety authorities. Co-operation agreements are foreseen and actually in discussion, but are not yet finalized. In the meantime, informal consultation is organized case by case if deemed necessary. The evolution of the industrial installations and traffic in the vicinity of the nuclear installation, and its possible impact on nuclear installations, is also a subject in the ten-yearly revision of the nuclear power plants.</p>		
Seq. No		Article	Ref. in National Report
52		Article 17	Section II.M.1
Question/ Comment	<p>This section describe safety studies performed after September 11 incidents Did the spent fuel storage facilities existing on both nuclear sites in Belgium been evaluated? (Particularly wet storage building of Tihange site).</p>		
Answer	<p>At the Doel site, the spent fuel is stored in a dry storage, using dedicated and approved transport casks. At the Tihange site, the spent fuel is stored in a spent fuel pond in a separate building, which is designed to withstand an accidental plane crash, as the one of Doel. After the terrorist attacks of September 11th, a re-evaluation was asked for this storage facility with respect to these new issues. In this context, the consequences of a heavy fire caused by the kerosene of the crashed airplane were examined. Specific procedures were developed and additional investments in equipments were done, in order to better fight against fire.</p>		
Seq. No		Article	Ref. in National Report
53		Article 17.3	§ II.M.2 - p.103
Question/ Comment	<p>Beyond actions taken to preclude nuclear facilities to withstand external phenomena, does the Kingdom of Belgium study the on-site effect of flood (for instance, possible leak path via galleries and ducts and then the possible degradations of train A and B equipment)?</p>		
Answer	<p>Protection against external floods has been considered at the design stage for both NPP sites, Doel and Tihange. For the Doel plants, a considerable margin (at least 2 m) exists between the water level of the probable maximum flood (design basis flood) and the height of the dikes protecting the site. For the Tihange plants, a</p>		

considerable margin (about 1,5 m) exists between the water level of the probable maximum flood (design basis flood) and the site level. However, as a consequence of unexpectedly high flood levels in recent years with potentially aggravating effects (waves, etc.), both in Belgium and abroad (e.g. the Blayais incident in France), the protection against floods is being re-evaluated for the Belgian NPP sites, in the framework of the ongoing ten-yearly safety review. Flooding caused either by natural phenomena (including combinations of extreme flooding events), or by on-site incidents leading to partial site flooding (e.g., overflow of cooling tower basins, circulating water circuit misalignments or ruptures), will be considered. Results of these safety reviews are not yet available.

Seq. No 54	Article Article 18	Ref. in National Report Section II.N.4.
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Question/
Comment In section II.N.4. “Accident Prevention Mitigation and Consequences” the National Report indicates that Probabilistic Analysis Level 1 and Level 2 were developed for all units.

Please provide information on:

What are the core damage frequencies for each unit? What kinds of scenarios were considered? What computer software was used? Were studies developed for internal and external events for all units? Which are the sequences of accidents with more contribution to core damage? For PSA level 2 which is the frequency of release? Who is in charged of developing PSA studies in the nuclear stations? Has Belgium developed applications in order to request changes to licensing basis? Are USNRC guides used for PSA applications? (RG 1.174 and 1.177) or Belgium has your own national acceptance criteria.

Answer In the framework of the Belgian PSA programme, no quantitative safety goals have been defined. Hence the absolute values of the core damage frequencies (CDF) have not been considered as primary outcomes of the PSAs. Some PSAs have not yet been updated after the modifications to the installation or to operational practices and hence some of the CDF as shown now by the current PSAs are not relevant anymore. The PSAs cover internal initiators for power operation and shutdown states. No internal or external hazards are considered up to now. All PSA models are managed under the RiskSpectrum software (as well by Tractebel for developing the PSAs as by AVN for reviewing the PSAs). The sequences that contribute most to CDF are rather plant specific, given the specificities of the Belgian plants. For all plants, shutdown states contribute in a non-negligible way to the total CDF. Only for 3 plants, a probabilistic Level 2 analysis has been performed and the evaluation of these analyses is now nearing the end. The PSAs are performed by Tractebel Engineering (Architect-Engineering company) on behalf of Electrabel (the utility). The PSAs have so far mainly been used for defining modifications based directly on the PSA results. In view of other changes to the licensing basis, a discussion was started on how to implement R.G. 1.174 into the Belgian regulatory framework. However, these discussions were not finalised and to date no PSA-based changes to the licensing basis, using a R.G. 1.174 approach, have been defined. AVN is using the PSAs for PSA-based Event Analysis and the results are presented to and discussed with the utility.

Seq. No	Article	Ref. in National Report
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55		Article 18.2	p. 107, II.N.3
Question/ Comment	In which way are low-power and shutdown states considered in reassessment studies?		
Answer	A global evaluation of safety under low-power and shutdown states has been launched in the framework of the current PSRs. It still needs to be further developed before answering this question in a detailed way.		
Seq. No 56		Article Article 19	Ref. in National Report Page 110
Question/ Comment	Good practice: Three independent authorities, including the regulatory body, are responsible for initial authorization. The authorization is signed by the King. Regulatory body monitors and approves commissioning program.		
	Comment: Operational limits derived from tests and safety analysis.		
Answer	Comment noted.		
Seq. No 57		Article Article 19	Ref. in National Report Page 111
Question/ Comment	Limits/Conditions based on analysis		
	Good practice: Modifications that have an impact on safety, and the associated changes to safety analysis report and tech specs, must be approved by the regulator.		
Answer	Thank you.		
Seq. No 58		Article Article 19	Ref. in National Report Page 111
Question/ Comment	Operation, Maintenance, Inspection & Testing in accordance with approved procedures		
	Comment: Lists of procedures required approved by regulator.		
Answer	Comment noted		
Seq. No 59		Article Article 19	Ref. in National Report Page 111
Question/ Comment	Incident/Accident Procedures		
	Comment: Full set of incident and accident and accident procedures developed by operators. Good Practice: SAMG's were implemented since the previous CNS report.		
	Are there any processes in place requiring the validation of incident and accident procedures on a plant specific simulator?		
Answer	Strictly speaking, there is no legal requirement to validate the incident and emergency operating procedures (EOPs) on a plant specific simulator. In other words, the SAR does not include any specific requirements to use the simulator to validate EOPs. However, a process for establishment, verification and update of EOPs is in place at the NPP sites.		
Seq. No		Article	Ref. in National Report

60		Article 19	Page 112
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Question/ Comment Engineering & Technical Support

Good Practice:
Organisational requirements for entire lifetime of plant specified in safety analysis report.

Good Practice:Architect Engineering company, also in charge / involved with ten yearly reviews, modifications, etc.Good Practice:Regulator, licensee and architect engineers in the process of combining all information available to ‘anchor’ their knowledge and establish a common design database.

In the light of Law 31 (January 2003) to phase out nuclear energy, what is in place to ensure that current good practices in terms of engineering and technical support is maintained up to successful decommissioning of all plants.

Answer Tractebel Engineering, acting as the Architect Engineer company is committed to maintain and develop its competencies in order to support the safe operation of all Belgian NPP's up to their successfully decommissioning. The identification of strategic competencies is jointly assessed between Electrabel and Tractebel Engineering, and actions are taken in areas of concern. As an example, one can mention that a specific design bases reconstitution project has been launched for the oldest units, in order to ensure an adequate level of knowledge of the design bases. In addition, Tractebel Engineering, also active abroad, maintains its competencies at the state of the art level through its participation in international workgroups and international R&D beside its own R&D projects. Tractebel Engineering and Electrabel financially support the Belgian Nuclear Engineering Network, set up by the Belgian Universities, to deliver a Master Degree in Nuclear Sciences.

Seq. No 61		Article Article 19	Ref. in National Report Page 112
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Question/ Comment Event Reporting

Comment:Notification requirements stipulated in safety analysis report.

Operating Experience Feedback

Good Practice:Authorisation decrees require operating experience be considered.
Good Practice:Database has been developed by regulator to systemise experience feedback and facilitate links with the safety analysis.

Are all incidents investigated and root cause analysis performed? How many incidents are typically raised per annum?

Answer All incidents are systematically investigated and a root cause analysis is carried out. The conclusions of each analysis are described in an incident report and transmitted to the Safety Authority. We're currently trying to improve our root cause analysis methodology by considering the available WANO insights and by putting more focus on human performance aspects. Between 30 and 40 incident reports are produced each year for both Electrabel sites (7 units).

Seq. No 62		Article Article 19	Ref. in National Report Page 113
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Question/ Comment Overall Comment

A good report

RadioactiveWaste

What requirements are set by the agency in charge of solid waste to have as a principal the minimization in volume and activity of solid waste?

Answer There are no specific requirements set by the agency, in charge of solid waste management, to have as a principal the minimization in volume and activity of solid waste. However, the requirements are driven by the quality of the waste and thus its ability to be managed on long term. The waste producer tries to reduce his production in order to increase the public acceptability and to reduce the cost of the waste management.

Seq. No	Article	Ref. in National Report
63	Article 19	

Question/ Comment What is the period of time to update technical documentation and simulator model for personnel training or professional development after modernisation of systems (equipment) at Belgian NPPs?

Answer The periodicity of simulator's update is 2 years; it complies with actual ANSI standards. If possible, we reduce this term to 1 year for significant modifications related to major safety enhancements.
The mean target term to update technical documentation after modification is 1/2 year. For significant modifications, "quick notification cards" are delivered to the licensed operators during the outage before the startup of the plant. Complete courses including modernisation features are given quickly to the licensed operators after the outage. In some special cases (e.g. I&C MMI replacement), courses could be given before realisations

Seq. No	Article	Ref. in National Report
64	Article 19.7	§II.O.7 – p. 112

Question/ Comment Could Belgium indicate what is its analysis of the sump clogging issue applied to Belgian units?

Answer After the incident in Barsebäck, some assessments were made during the periodic safety reevaluation to improve the design of the filters installed in the containment sumps. The evolution of this issue was further followed-up by the licensee by the screening of international activities in this area. When the LANL published its evaluation on GSI 191 in 2002, the AIO sent a letter to the licensee to urge him to take appropriate actions. This resulted in several activities such as walkdowns in all containment buildings to better characterize potential debris, complementary instructions to the operators to cope with sump plugging and improvements of the sump filters (still in implementation phase).

Seq. No	Article	Ref. in National Report
65	Article 19.7	p. 112-113, II.O.7

Question/ Comment How do the operating organisations report the results of experience feedback (internal and external) to the authorities? Is there a formal reporting mechanism? How is effectiveness of the OEF system reviewed by the regulator?

Answer There is no formal reporting requested from the operator on the results of experience feedback activities. The effectiveness of the operating experience feedback process is assessed through routine inspections and dedicated

inspections examining specifically the experience feedback process.